

## Ammonia and foals don't mix

### Reduce ammonia levels to lower your foal's risk of respiratory disease.

by Dr. Frederick Harper, Extension Horse Specialist  
Animal Science Department, University of Tennessee

This is the time of year when many of us get colds, or at least do a lot of coughing and sneezing. Also, it is that time of year when foals are being born. It is a frustrating time for horse breeders. About 15 percent of all foals have a severe respiratory disease before they are one year of age. Problems appear from one month to one year of age. But, most respiratory diseases occur when the foal is 2-6 months of age.

Not only are these diseases costly and time-consuming to treat, but they disrupt other farm activities, such as foaling, breeding mares, training and showing. Horse breeders need to review management practices, seeking methods to reduce insults to foals that place them at risk. One of these is reducing the level of ammonia. High ammonia levels have been associated with respiratory problems in foals, as well as other animals.

Protein in the diet is broken down by the body, resulting in urea that is excreted in the urine and volatilized to ammonia in the environment. Often, horse owners keep

barns shut up to keep out the cold. They may even heat their barn in winter, especially if they have show horses. A strong ammonia odor can often be identified when entering these barns. Much of the ammonia is near the floor where young foals spend a lot of time.

Young foals also have an immature respiratory system, making them more susceptible to disease. It has been reported that 10 ppm of ammonia is the level above which one might expect problems in animals. But, ammonia levels as high as 400 parts per million (ppm) were measured in foal stalls in one study. So, it is important to reduce the level of ammonia in foaling stalls, and all stalls in barns where foals reside.

In a University of Illinois study, the ammonia level was the same regardless of whether straw, sawdust, sand or shredded paper bedding was used. But, 1-2 pounds of hydrated lime reduced the ammonia levels when sprinkled on the stall floor after cleaning and before re-bedding. Ammonia levels were noticeably lower 48-72 hours after the hydrated lime was applied with straw, but not until 72 hours with sawdust. A commercial product prevented detectable ammonia levels at either 48 or 72 hours with either straw or sawdust.

In another study at the University of Pennsylvania, researchers lowered ammonia levels to non-detectable levels when 10 pounds of sodium bisulfate were placed on the floor of a 10' x 10' stall (100 square feet), before bedding with 33 pounds of straw. Afterwards, sodium bisulfate was sprinkled on top of the bedding daily, then 4.5 pounds of straw was spread over the old bedding.

Straw is the preferred bedding material at foaling. Afterwards, the mare and foal can be bedded on sawdust or other suitable bedding materials. It is also advisable to check the level of protein being fed to broodmares. Excess protein in the diet results in greater levels of ammonia. Not only can this negatively affect the foal, but excess protein is a waste of money.

Horse breeders need to remove waste and soiled bedding daily, and apply hydrated lime, sodium bisulfate or a commercial stall product along with additional clean, fresh bedding to reduce levels of ammonia in foal stalls. ★



Keeping a clean, ammonia-free stall is especially important when it comes to foals, who are at greater risk for respiratory disease than older horses.